INDEX.

Advances in Iron Coagulation and Coagulants. By E. L. BEAN. 273, Sept.
Ammonia-Chlorine Treatment of the East Providence, R. I., Water Supply, Experience with. By JAMES V. TURNER and CHARLES L. POOL. 13, Mar.
Anthony, Sidney S. Standardization of Hydrant Markings. 103, June.

Ball and Socket Pipe at Haverhill, Mass., Joint-Leakage Tests in 16-in. By HERBERT C. CROWELL. 122, June.
Barrows, Frank C. Steps in the Purification of the Bridgeport Water Supply. 219, Sept.
Bean, E. L. Advances in Iron Coagulation and Coagulants. 273, Sept.
Boardman, Nelson. Field Tests of Large Meters. 129, June.
Booth, George W. Fire Protection Classification. 190, June.
Boston, Maintenance of Gate Valves in. By GEORGE H. FINNERAN. 115, June.
Bridge Crossing on 42-in. Pipe Line, Replacement of Brook Crossing with. By HAROLD W. GRISWOLD. 22, Mar.
Bridgeport Hydraulic Company.
General Description of System. By SAMUEL P. SENIOR. 213, Sept.
Operation of Distribution System. By D. H. HALL. 216, Sept.
Purification of Water Supply. By FRANK C. BARROWS. 219, Sept.
Watershed and Forestation Work. By WILLIAM C. POLLITT. 223, Sept.
Brook Crossing with Bridge Crossing on 42-in. Pipe Line, Replacement of. By HAROLD W. GRISWOLD. 22, Mar.

Calderwood, D. C. Historical Notes on a Line of 10-in. Cast Iron Pipe Laid in 1854, Pennichuck Water Works, Nashua, N. H. 124, June.
Carlton, Leland G. Management of a Municipally Owned Waterworks. 343, Dec.
Cast Iron Pipe Laid in 1854, Pennichuck Water Works, Nashua, N. H., Historical Notes on a Line of 10-in. By D. C. CALDERWOOD. 124, June.
Chase, E. Sherman. The Way Out. 207, June.
Clark, Arthur T. Experiences with Water Main Cleaning. 184, June; 296, Sept.
Coagulation and Coagulants, Advances in Iron. By E. L. BEAN. 273, Sept.
Cobble Mountain Diversion Tunnel, Construction of the. By HARRY H. HATCH. 133, June.
Concord, N. H., the New High Service Water Supply. By PERCY R. SANDERS and FRANK A. MARSTON. 1, Mar.
Construction of the Cobble Mountain Diversion Tunnel. By HARRY H. HATCH. 133, June.
Crowell, Herbert C. Joint-leakage Tests on 16-in. Ball and Socket Pipe at Haverhill, Mass. 122, June.

Design of Pipe Lines, the. By KARL R. KENNISON. 27, Mar.
Determination of Odors and Tastes in Water, on the. By GORDON M. FAIR. 248, Sept.
Devendorf, Earl. Waterborne Disease in New York State. 298, Sept.
Diesel Engine as a Prime Mover for Pumping, the High-Speed. By ELLIOTT EARL. 61, Mar.
Disease in New York State, Waterborne. By EARL DEVENDORF. 298, Sept.
Disinfection of Water Mains. A Round Table Discussion. 195, June.

Distribution System, Methods of Operation of the Bridgeport Water. By D. H. HALL, 216, Sept.
Diversion Tunnel, Construction of the Cobble Mountain. By HARRY H. HATCH. 133, June.

Earl, Elliott. The High-Speed Diesel Engine as a Prime Mover for Pumping. 61, Mar.
East Providence, R. I. Water Supply, Experience with Ammonia-Chlorine Treatment of the. By JAMES V. TURNER and CHARLES L. POOL. 13, Mar.
Electrical Kinks in Water-Works Practice, some. By J. H. READ. 131, June.
Ellis, Richard H. Portrait of President. Frontispiece. Mar.
Evaporating Power of the Air, Relation of Forest to the. By PAUL W. STICKEL. 229, Sept.
Experience with Ammonia-Chlorine Treatment of the East Providence, R. I., Water Supply. By JAMES V. TURNER and CHARLES L. POOL. 13, Mar.
Experiences with Water Main Cleaning. By ARTHUR T. CLARK. 184, June; 296, Sept.

Fair, Gordon M. On the Determination of Odors and Tastes in Water. 248, Sept.
Field Tests of Large Meters. By NELSON BOARDMAN. 129, June.
Finneran, George H. Maintenance of Gate Valves in Boston. 115, June.
Fire Protection Classification. By GEORGE W. BOOTH. 190, June.
Flowage Tests at Portland, Me., Hydrant Pressure and. By LEAVITT R. SMITH. 107, June.
Forestation Work of the Bridgeport Hydraulic Company, Watershed and. By WILLIAM C. POLLITT. 223, Sept.
Forests to the Evaporating Power of the Air, Relation of. By PAUL W. STICKEL. 229, Sept.
Freeman, John R. Obituary. 100, Mar.
Friction Coefficients, Pipe Linings and. By ELSON T. KILLAM. 283, Sept.

Gate Valves in Boston, Maintenance of. By GEORGE H. FINNERAN. 115, June.
Gate Valves, Inspection and Maintenance of. By C. W. MOWRY. 111, June.
General Description of Bridgeport Hydraulic Company's System. By SAMUEL P. SENIOR. 213, Sept.
Geology to the Groundwater Supplies of New England, Relation of. By IRVING B. CROSBY. 74, Mar.
Great Storm of September 16 and 17, 1932, the. By GEORGE V. WHITE. 164, June.
Griffin, Attmore E. and **Robert Spurr Weston.** Manganese in Impounded Water Supplies. 40, Mar.; 280, Sept.
Griswold, Harold W. Replacement of Brook Crossing with Bridge Crossing on 42-in. Pipe Line. 22, Mar.
Groundwater Supplies of New England, Relation of Geology to the. By IRVING B. CROSBY. 74, Mar.
Group Management of Water Companies. By REEVES J. NEWSOM. 337, Dec.

Hall, D. H. Methods of Operation of the Bridgeport Water Distribution System. 216, Sept.
Hatch, Harry H. Construction of the Cobble Mountain Diversion Tunnel. 133, June.
Haverhill, Mass., Joint-Leakage Tests on 16-in. Ball and Socket Pipe at. By HERBERT C. CROWELL. 122, June.
High Service Water Supply of Concord, N. H., the New. By PERCY R. SANDERS and FRANK A. MARSTON. 1, Mar.
High-Speed Diesel Engine as a Prime Mover for Pumping, the. By ELLIOTT EARL. 61, Mar.

Historical Notes on a Line of 10-in. Cast Iron Pipe Laid in 1854, Pennichuck Water Works, Nashua, N. H. By D. C. CALDERWOOD. 124, June.
Holmgren, Richard S. Reconstruction of the Lebanon, N. H., Water Works. 52, Mar.
Hydrant Markings, Standardization of. By SIDNEY S. ANTHONY. 103, June.
Hydrant Pressure and Flowage Tests at Portland, Me. By LEAVITT R. SMITH. 107, June.
Hydraulic Science, New England's Classic Contributions to. By CHARLES W. SHERMAN. 153, June.
Hydrology, some Phases of Southern New England. By CALEB MILLS SAVILLE. 363, Dec.

Impounded Water Supplies, Manganese in. By ROBERT SPURR WESTON and ATTMORE E. GRIFFIN. 40, Mar.; 280, Sept.
Inspection and Maintenance of Gate Valves. By C. W. MOWRY. 111, June.
Iron Coagulation and Coagulants, Advances in. By E. L. BEAN. 273, Sept.

Joint-Leakage Tests on 16-in. Ball and Socket Pipe at Haverhill, Mass. By HERBERT C. CROWELL. 122, June.

Kennison, Karl R. The design of Pipe Lines. 27, Mar.
Killam, Elson T. Pipe Linings and Friction Coefficients. 283, Sept.

Leakage Tests on 16-in. Ball and Socket Pipe at Haverhill, Mass., Joint. By HERBERT C. CROWELL. 122, June.
Lebanon, N. H., Water Works, Reconstruction of. By RICHARD S. HOLMGREN. 52, Mar.
Linings and Friction Coefficients, Pipe. By ELSON T. KILLAM. 283, Sept.

Maintenance of Gate Valves in Boston. By GEORGE H. FINNERAN. 115, June.
Maintenance of Gate Valves, Inspection and. By C. W. MOWRY. 111, June.
Management of a Municipally Owned Waterworks. By LELAND G. CARLTON. 343, Dec.
Management of Water Companies, Group. By REEVES J. NEWSOM. 337, Dec.
Manganese in Impounded Water Supplies. By ROBERT SPURR WESTON and ATTMORE E. GRIFFIN. 40, Mar.; 280, Sept.
Marston, Frank A. and **Percy R. Sanders.** The New High-Service Water Supply of Concord, N. H. 1, Mar.
Methods of Operation of the Bridgeport Water Distribution System. By D. H. HALL. 216, Sept.
Meters, Field Tests of Large. By NELSON BOARDMAN. 129, June.
Mowry, C. W. Inspection and Maintenance of Gate Valves. 111, June.
Municipally-owned Water Works, Management of a. By LELAND G. CARLTON. 343, Dec.
New England Hydrology, some Phases of Southern. By CALEB MILLS SAVILLE. 363, Dec.
New England, Relation of Geology to the Groundwater Supplies of. By IRVING B. CROSBY. 74, Mar.
New England's Classic Contributions to Hydraulic Science. By CHARLES W. SHERMAN. 153, June.

New England Water Works Association.
Address of President. By RICHARD H. ELLIS. 320, Sept.
Dexter Brackett Memorial Medal, Award of. 315, Sept.
Election of Officers. 319, Sept.
Federal Emergency Public Works Administration:
Remarks by L. A. Hoffman. 451, Dec.
Remarks by E. Sherman Chase. 456, Dec.
Honorary Memberships, Award of. 315, Sept.
Proceedings:
January Meeting. 96, Mar.
February Meeting. 97, Mar.
March Meeting. 209, June.
April Meeting. 210, June.
September Meeting. 313, Sept.
November Meeting. 449, Dec.
Water Works School. 98, Mar.
Reports:
Editor. 330, Sept.
Finance Committee. 333, Sept.
Secretary. 323, Sept.
Treasurer. 326, Sept.
New High Service Water Supply of Concord, N. H., The. By PERCY R. SANDERS and FRANK A. MARSTON. 1, Mar.
Newsom, Reeves J. Group Management of Water Companies. 337, Dec.
New York State, Waterborne Disease in. By EARL DEVENDORF. 298, Sept.

Obituaries:
John R. Freeman. 100, Mar.
Walter H. Richards. 334, Sept.
Odors and Tastes in Water, on the Determination of. By GORDON M. FAIR. 248, Sept.
Operation of the Bridgeport Water Distribution System, Methods of. By D. H. HALL. 216, Sept.

Pennichuck Water Works, Nashua, N. H., Historical Notes on a Line of 10-in. Cast Iron Pipe Laid in 1854. By D. C. CALDERWOOD. 124, June.
Pipe at Haverhill, Mass., Joint Leakage Tests on 16-in. Ball and Socket. By HERBERT C. CROWELL. 122, June.
Pipe Laid in 1854, Pennichuck Water Works, Nashua, N. H., Historical Notes on a Line of 10-in. Cast Iron. By D. C. CALDERWOOD. 124, June.
Pipe Line, Replacement of Brook Crossing with Bridge Crossing on 42-in. By HAROLD W. GRISWOLD. 22, Mar.
Pipe Lines, the Design of. By KARL R. KENNISON. 27, Mar.
Pipe Linings and Friction Coefficients. By ELSON T. KILLAM. 283, Sept.
Pollitt, William C. Watershed and Forestation Work of the Bridgeport Hydraulic Company. 223, Sept.
Pool, Charles L. and **James V. Turner.** Experience with Ammonia-Chlorine Treatment of the East Providence, R. I., Water Supply. 13, Mar.
Portland, Me., Hydrant Pressure and Flowage Tests at. By LEAVITT R. SMITH. 107, June.
Pressure and Flowage Tests at Portland, Me., Hydrant. By LEAVITT R. SMITH. 107, June.
Prime Mover for Pumping, the High-Speed Diesel Engine as a. By ELLIOTT EARL. 61, Mar.

Pumping, the High-speed Diesel Engine as a Prime Mover for. By ELLIOTT EARL. 61, Mar.
Purification of the Bridgeport Water Supply, Steps in the. By FRANK C. BARROWS. 219, Sept.

Read, J. H. Some Electrical Kinks in Water-works Practice. 131, June.
Reconstruction of the Lebanon, N. H., Water Works. By RICHARD S. HOLMGREN. 52, Mar.
Relation of Forests to the Evaporating Power of the Air. By PAUL W. STICKEL. 229, Sept.
Relation of Geology to the Groundwater Supplies of New England. By IRVING B. CROSBY. 74, Mar.
Relief Undertakings on Water Works, Use of Unemployed and. A Round Table Discussion. 200, June.
Replacement of Brook Crossing with Bridge Crossing on 42-in. Pipe Line. By HAROLD W. GRISWOLD. 22, Mar.
Richards, Walter H. Obituary. 334, Sept.
Round Table Discussions.
Disinfection of Water Mains. 195, June.
Use of Unemployed and Relief Undertakings on Water Works. 200, June.

Sanders, Percy R. and **Frank A. Marston.** The New High Service Water Supply of Concord, N. H. 1, Mar.
Saville, Caleb Mills. Some Phases of Southern New England Hydrology. 363, Dec.
Senior, Samuel P. General Description of Bridgeport Hydraulic Company's System. 213, Sept.
Sherman, Charles W. New England's Classic Contributions to Hydraulic Science. 153, June.
Smith, Leavitt R. Hydrant Pressure and Flowage Tests at Portland, Me. 107, June.
Some Phases of Southern New England Hydrology. By CALEB MILLS SAVILLE. 363, Dec.
Southern New England Hydrology, some Phases of. By CALEB MILLS SAVILLE. 363, Dec.
Standardization of Hydrant Markings. By SIDNEY S. ANTHONY. 103, June.
Steps in the Purification of the Bridgeport Water Supply. By FRANK C. BARROWS. 219, Sept.
Stickel, Paul W. Relation of Forests to Evaporating Power of the Air. 229, Sept.
Storm of September 16 and 17, 1932, the Great. By GEORGE V. WHITE. 164, June.

Tastes in Water, on the Determination of Odors and. By GORDON M. FAIR. 248, Sept.
Tests at Portland, Me., Hydrant Pressure and Flowage. By LEAVITT R. SMITH. 107, June.
Tests of Large Meters, Field. By NELSON BOARDMAN. 129, June.
Tests on 16-in. Ball and Socket Pipe at Haverhill, Mass., Joint-leakage. By HERBERT C. CROWELL. 122, June.
Treatment of the East Providence, R. I., Water Supply, Experience with Ammonia-Chlorine. By JAMES V. TURNER and CHARLES L. POOL. 13, Mar.
Tunnel, Construction of the Cobble Mountain Diversion. By HARRY H. HATCH. 133, June.
Turner, James V. and **Charles L. Pool.** Experience with Ammonia-Chlorine Treatment of the East Providence, R. I., Water Supply. 13, Mar.

Unemployed and Relief Undertakings on Water Works, Use of. A Round Table Discussion. 200, June.
Use of Unemployed and Relief Undertakings on Water Works. A Round Table Discussion. 200, June.

Valves in Boston, Maintenance of Gate. By GEORGE H. FINNERAN. 115, June.
Valves, Inspection and Maintenance of Gate. By C. W. MOWRY. 111, June.

Wakefield Water Supply. By ROBERT SPURR WESTON. 239, Sept.
Waterborne Disease in New York State. By EARL DEVENDORF. 298, Sept.
Water Companies, Group Management of. By REEVES J. NEWSOM. 337, Dec.
Water Main Cleaning, Experiences with. By ARTHUR T. CLARK. 184, June; 296, Sept.
Water Mains, Disinfection of. A Round Table Discussion. 195, June.
Watershed and Forestation Work of the Bridgeport Hydraulic Company. By WILLIAM C. POLLITT. 223, Sept.
Water Supply of Concord, N. H., the New High Service. By PERCY R. SANDERS and FRANK A. MARSTON. 1, Mar.
Water Supply, Wakefield. By ROBERT SPURR WESTON. 239, Sept.
Waterworks, Management of a Municipally Owned. By LELAND G. CARLTON. 343, Dec.
Water Works, Reconstruction of the Lebanon, N. H. By RICHARD S. HOLMGREN. 52, Mar.
Way Out, the. By E. SHERMAN CHASE. 207, June.
Weston, Robert Spurr. Wakefield Water Supply. 239, Sept.
Weston, Robert Spurr and **Attmore E. Griffin.** Manganese in Impounded Water Supplies. 40, Mar.; 280, Sept.
White, George V. The Great Storm of September 16 and 17, 1932. 164, June.

Photo by Bachrach

RICHARD H. ELLIS.
President of the New England Water Works Association.
1932-1933.